

### **REMARKS/ARGUMENTS**

In the Office Action dated March 10, 2006, Claims 1-6 were objected to as including “capable of” language. In addition, independent Claims 1 and 7 were rejected under 35 U.S.C. § 103(a) as being obvious over U.S. Patent Application Publication No. 2002/0153497 to Pepper et al. (“Pepper”), in view of U.S. Patent No. 5,768,000 to Tajima (“Tajima”). Dependent Claims 2-6 and 8-13 were objected to as being dependent upon a rejected base claim, but were otherwise allowable. In addition, Applicant notes with appreciation the Examiner’s indication that Claims 14-16 are allowed.

In response to the Office Action, Applicant has amended Claims 1-6 to more clearly define the claimed invention, revising the “capable of” language to refer to the respective elements being “configured for” performing the recited functions. Applicant therefore respectfully submits that the objection to Claims 1-6 is overcome.

Applicant has not amended any of the claims in view of either Pepper or Tajima, however, and accordingly, traverses the rejection of Claims 1 and 7 as being unpatentable over their combination. As explained below, Applicant respectfully submits that the claimed invention of Claims 1 and 7 is patentably distinct from Pepper and Tajima, taken individually or in combination. In view of the amendments to the claims and the remarks presented below, Applicant respectfully requests reconsideration and allowance of all of the pending claims of the present application.

#### ***I. Summary of the Pepper Reference***

Pepper discloses a system and method for focusing electromagnetic energy on a moving target. As disclosed, the system includes a telescope **22** that focuses a wavefront onto a first mirror **28** that reflects the wavefront to a second mirror **32** via a laser amplifier **30**. The laser amplifier, which may comprise an optical parametric amplifier, amplifies energy at the wavelength of a beacon laser **12** that illuminates a target to thereby produce the wavefront focused by the telescope **22**. After being reflected to the second mirror **32**, the reflected wavefront is directed to a tracker for providing tilt control and focus correction for the first mirror **28**. Pepper discloses a system for controlling an optical imaging system that comprises an

optical amplifier 30, and a tracking device 34 capable of receiving the light provided by the optical amplifier 30. Pepper states that the illustrative application of its invention is in connection with infrared countermeasures (IRCM) with respect to incoming threats. *See* Pepper, Paragraph 0017. Pepper recites focusing the maximum amount of infrared energy on a target in order to achieve optimal IRCM protection. *See* Pepper, Paragraph 0034. Accordingly, Pepper discloses the use of an optical amplifier 30 to provide maximum gain in order to ensure maximum energy enhancement.

## ***II. Summary of the Claimed Invention***

Independent Claims 1 and 7 are directed to a system and method for controlling an optical imaging system 10 capable of providing an image of a target. The system includes a reflector 12, an optical amplifier 28 and a tracking device 18. The reflector 12 is configured for reflecting light representative of the image provided by the optical imaging system 10. In addition, the reflector 12 is configured for being adjusted in at least one direction based upon movement of the image provided by the optical imaging system 10. The optical amplifier 28 is configured for amplifying an intensity of the light reflected by the reflector 12 with a variable gain based upon the intensity of the reflected light. The tracking device 18 is configured for receiving the light from the optical amplifier 28 such that the reflector 12 can be driven to a position in at least one direction based upon an image of the target represented by the light received by the tracking device 18.

## ***III. The Prior Art Does Not Teach or Suggest the Use of a Variable-Gain Optical Amplifier to Enhance the Energy on a Target***

In contrast to the claimed invention, and as conceded in the Office Action, Pepper does not teach or suggest amplifying an intensity of the reflected light with a variable gain based upon the intensity of the reflected light. Nonetheless, the Office Action alleges that Tajima discloses this feature of the claimed invention, and that it would have been obvious to modify Pepper to include the feature. As motivation, the Office Action alleges that it would have been obvious to a person of ordinary skill in the art at the time of the invention to combine an optical amplifier

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with a variable gain based upon the intensity of the reflected light to provide better signal strength. Applicant respectfully disagrees.

Even if Pepper and Tajima do disclose individual elements of the claimed invention, Applicant respectfully submits that one skilled in the art would not be motivated to combine their teachings to disclose the claimed invention. Pepper recites using an optical amplifier **30** for maximum energy enhancement. Maximum energy enhancement is achieved through operating the optical amplifier in saturation mode at maximum gain. Even if the Pepper amplifier **30** could be modified to have a variable gain, such a modification would be useless to the system as described because the amplifier **30** would be used in saturation mode at the limit of the capabilities of the optical surfaces to ensure maximum IRCM capabilities. Using Pepper in conjunction with a variable-gain optical amplifier at anything less than maximum gain would only reduce the system's effectiveness, since a lower gain would not allow for maximum energy enhancement.

Moreover, Applicant disagrees with the contention set forth in the Office Action that one skilled in the art would be motivated to make the aforementioned combination to provide "better signal strength." Office Action, page 3. By amplifying the reflected wavefront from the first mirror **28**, the laser amplifier **30** of Pepper already and alone provides better signal strength than without such amplification. By itself, the fact that an amplifier has a variable gain provides no better signal strength than a fixed-gain amplifier. Thus, modifying the fixed-gain amplifier of Pepper into the variable-gain amplifier of Tajima does not generally provide any better signal strength than the fixed-gain amplifier of Pepper already provides.

Applicant therefore respectfully submits that independent Claims 1 and 7 are patentably distinct from Pepper and Tajima, taken individually. And as explained above, these references cannot properly be combined. As such, Applicant respectfully submits that rejection of Claims 1 and 7 as being obvious over Pepper in view of Tajima is overcome.

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### **CONCLUSION**

In view of the amended claims and the remarks presented above, it is respectfully submitted that all of the claims of the present application are in condition for immediate allowance. It is therefore respectfully requested that a Notice of Allowance be issued. The Examiner is encouraged to contact Applicant's undersigned attorney to resolve any remaining issues in order to expedite examination of the present application

It is not believed that extensions of time or fees for net addition of claims are required, beyond those that may otherwise be provided for in documents accompanying this paper. However, in the event that additional extensions of time are necessary to allow consideration of this paper, such extensions are hereby petitioned under 37 C.F.R. § 1.136(a), and any fee required therefore (including fees for net addition of claims) is hereby authorized to be charged to Deposit Account No. 16-0605.

Respectfully submitted,



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